

**What Is Claimed Is:**

1           1.    A method of detecting a type of an optical disc  
2    according to a rotation speed of a spindle motor loading the  
3    optical disc, comprising the following steps:

4           (a) driving the spindle motor;

5           (b) detecting the rotation speed of the spindle motor after  
6           a predetermined period; and

7           (c) comparing the rotation speed of the spindle motor with  
8           a plurality of predetermined rotation speeds to  
9           determine the type of optical disc loaded on the  
10          spindle motor.

1           2.    The method of detecting a type of an optical disc as  
2    claimed in claim 1, wherein the spindle motor is driven by a  
3    voltage having a predetermined waveform.

1           3.    The method of detecting a type of an optical disc as  
2    claimed in claim 2, wherein the predetermined waveform comprises  
3    a higher voltage level in a first period to overcome static  
4    friction of the spindle motor, and a lower voltage level in a  
5    second period to drive the rotating spindle motor.

1           4.    The method of detecting a type of an optical disc as  
2    claimed in claim 1, wherein the rotation speed of the spindle  
3    motor is measured by Hall sensor.

1           5.    The method of detecting a type of an optical disc as  
2    claimed in claim 1, wherein no optical disc in the spindle motor  
3    is determined when the rotation speed of the spindle motor is  
4    higher than the predetermined rotation speeds.

1        6.    The method of detecting a type of optical disc as  
2        claimed in claim 1, wherein the predetermined rotation speeds  
3        at least comprise a first predetermined rotation speed and a  
4        second predetermined rotation speed.

1        7.    The method of detecting a type of an optical disc as  
2        claimed in claim 6, wherein the type of the optical disc is  
3        determined as an 8cm optical disc when the rotation speed of the  
4        spindle motor is between the first predetermined rotation speed  
5        and the second predetermined rotation speed.

1        8.    The method of detecting a type of an optical disc as  
2        claimed in claim 6, wherein the type of the optical disc is  
3        determined as a 12 cm optical disc when the rotation speed of  
4        the spindle motor is slower than the second predetermined  
5        rotation speed.

1        9.    The method of detecting a type of an optical disc as  
2        claimed in claim 6, wherein the first predetermined rotation  
3        speed is slower than the second predetermined rotation speed.

1        10.   An optical disc drive for detecting a type of an  
2        optical disc having a spindle motor loading the optical disc,  
3        comprising:

4            a processor;

5            a memory coupled to the processor for recording a plurality  
6            of predetermined rotation speeds; and

7            a rotation sensor coupled to the processor for detecting  
8            a rotation speed of the spindle motor, wherein the  
9            processor compares the rotation speed of the spindle  
10          motor in a predetermined time with the predetermined

11 rotation speeds to determine the type of the optical  
12 disc loaded on the spindle motor.  
13

1 11. The optical disc drive as claimed in claim 10, further  
2 comprising a spindle motor drive to drive the spindle motor by  
3 a voltage having a predetermined waveform.

1 12. The optical disc drive as claimed in claim 11, wherein  
2 the predetermined waveform comprises a higher voltage level in  
3 a first period to overcome static friction of the spindle motor,  
4 and a lower voltage level in a second period to drive the rotating  
5 spindle motor.

1 13. The optical disc drive as claimed in claim 10, wherein  
2 the processor compares the rotation speed of the spindle motor  
3 with the predetermined rotation speeds, it is determined that  
4 there is no optical disc in the spindle motor when the rotation  
5 speed of the spindle motor is higher than the predetermined  
6 rotation speeds.

1 14 The optical disc drive as claimed in claim 10, wherein  
2 the predetermined rotation speeds at least comprise a first  
3 predetermined rotation speed and a second predetermined  
4 rotation speed.

1 15. The optical disc drive as claimed in claim 14, wherein  
2 the processor compares the rotation speed of the spindle motor  
3 with the first predetermined rotation speed and a second  
4 predetermined rotation speed, and the type of the optical disc  
5 is determined as a small optical disc (8cm) when the rotation

6 speed of the spindle motor is between the first predetermined  
7 rotation speed and the second predetermined rotation speed.

1 16. The optical disc drive as claimed in claim 14, wherein  
2 the processor compares the rotation speed of the spindle motor  
3 with the second predetermined rotation speed, and the type of  
4 the optical disc is determined as a normal optical disc (12cm)  
5 when the rotation speed of the spindle motor is slower than the  
6 second predetermined rotation speed.

1 17. The optical disc drive as claimed in claim 14, wherein  
2 the first predetermined rotation speed is slower than the second  
3 predetermined rotation speed.

1 18. The optical disc drive as claimed in claim 10, wherein  
2 the rotation speed sensor is a Hall sensor